Women's empowerment mitigates the negative effects of low production diversity on maternal and child nutrition in Nepal

Hazel Malapit[1], Suneetha Kadiyala[2], Agnes Quisumbing[1], Kenda Cunningham[2] and Parul Tyagi[1]

[1] International Food Policy Research Institute, Poverty, Health and Nutrition Division
[2] London School of Hygiene and Tropical Medicine, Leverhulme Centre for Integrative Research on Agriculture and Health

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Why agriculture for nutrition?

- Agricultural growth and development is effective in reducing poverty, but do NOT necessarily translate into improved nutrition outcomes
- A wide body of literature demonstrates that links between agriculture, health and nutrition are dynamic and multifaceted (Gillespie 2001; Headey 2011; Hoddinott 2011)
- *How should agricultural policies and programs be designed and implemented to achieve nutritional objectives?*

Gender matters!

- 6 pathways through which agricultural interventions can affect nutrition (Ruel and Alderman 2013) :

Ag

1. Agriculture as a source of food for own consumption
2. Agriculture as a source of income
3. Agricultural policies on prices of food and nonfood crops
4. Effects of women's social status and empowerment on their access to and control over resources
5. Impact of women's participation in agriculture on their time allocation
6. Impact of women's participation in agriculture on their own health and nutritional status

ALL MEDIATED BY GENDER ROLES

What this paper tries to do

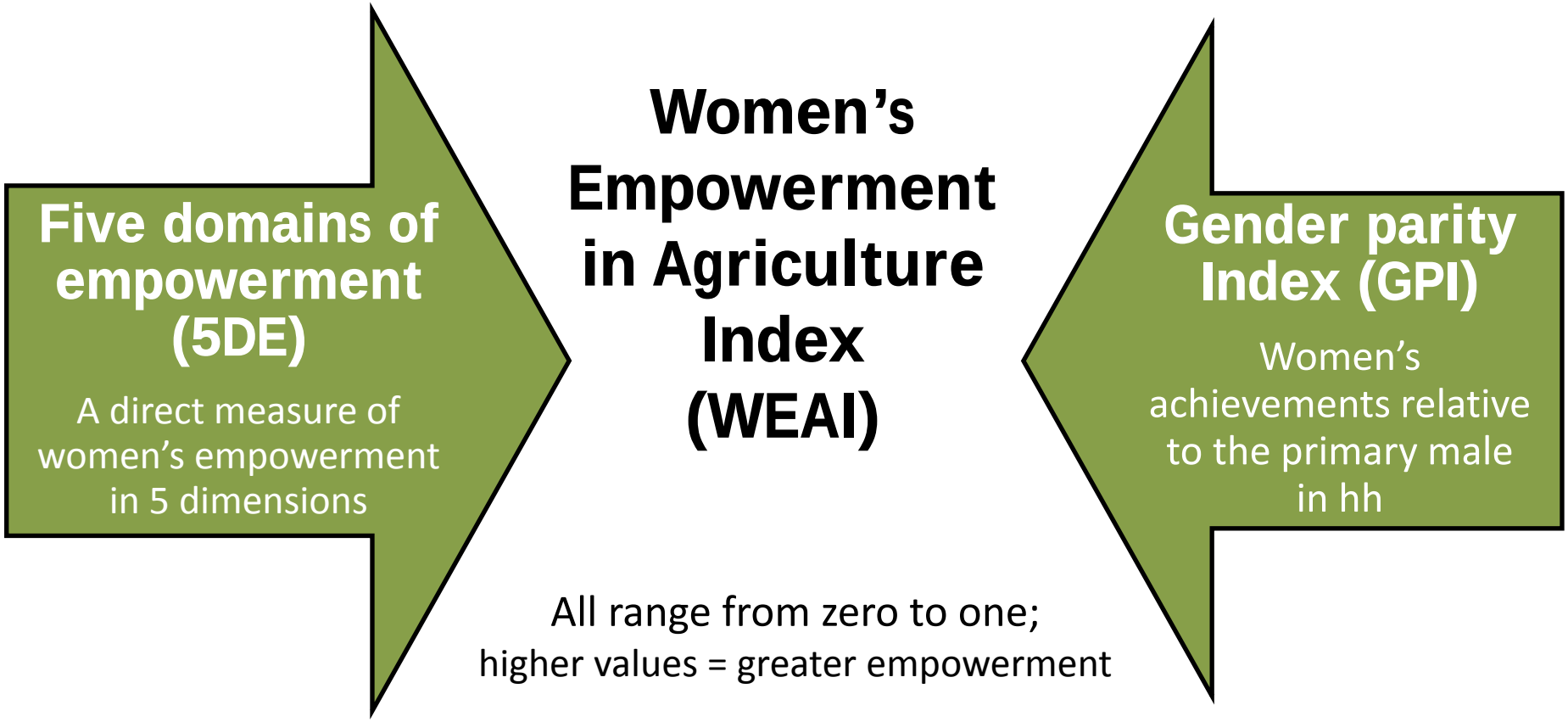
- Hypothesize that both production diversity and women's empowerment are important determinants of maternal and child nutrition in rural semi-subsistence households such as in Nepal
- Does women's empowerment mitigate the effect of low production diversity on nutrition, or does it exacerbate it?

Women's Empowerment in Agriculture Index (WEAI)

- Key aspect of index construction: similar to family of multi-dimensional poverty indices (Alkire and Foster 2011, J of Public Econ) and the Foster-Greere-Thorbeck (FGT) poverty indices
- Innovative because it uses interviews of the primary male and primary female adults in the same household
- Focus is strictly on **empowerment in agriculture**, distinct from economic status, education, and empowerment in other domains
- Details on index construction in Alkire et al. (2013), *World Development*

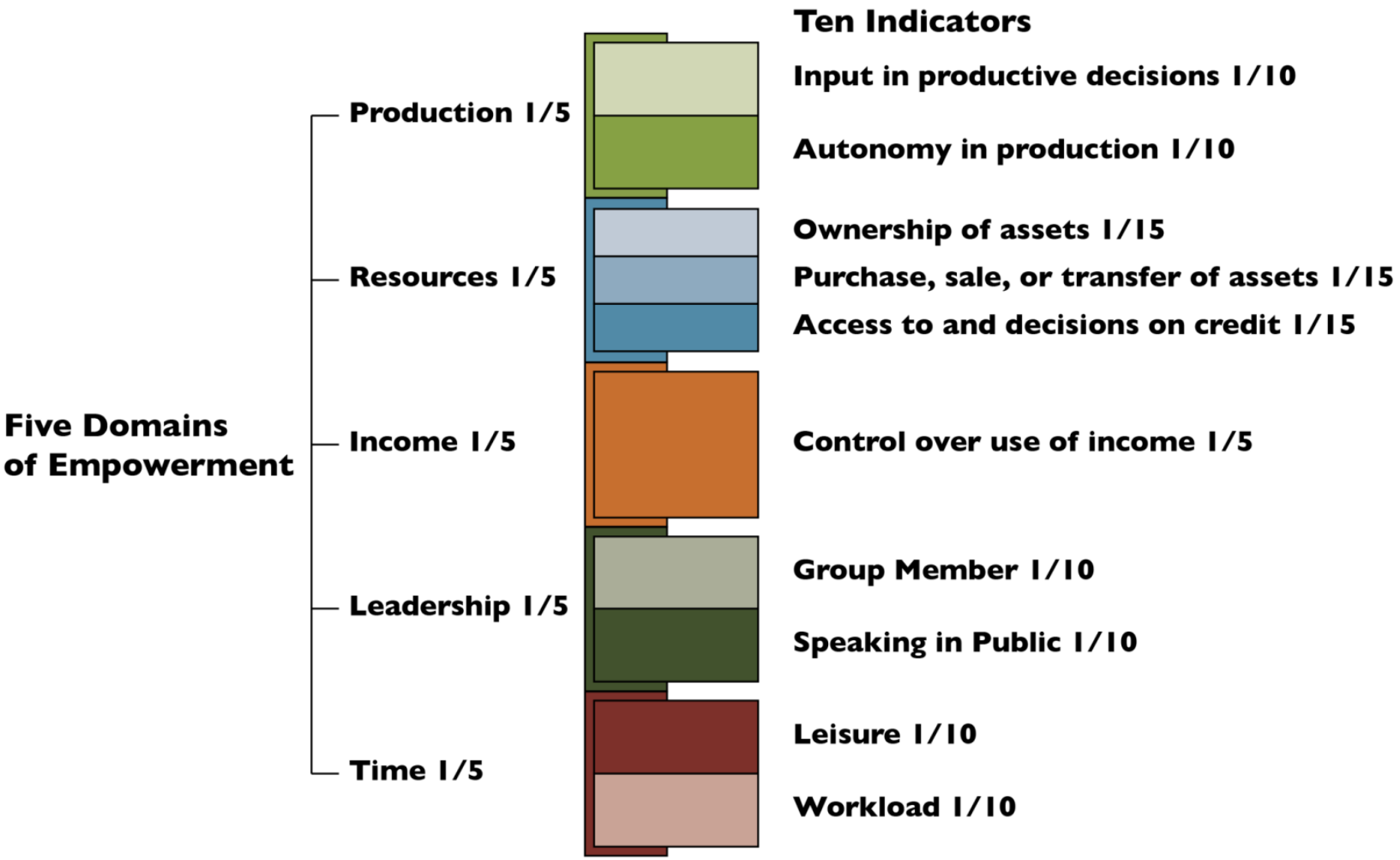
How is the Index constructed?

WEAI is made up of two sub indices



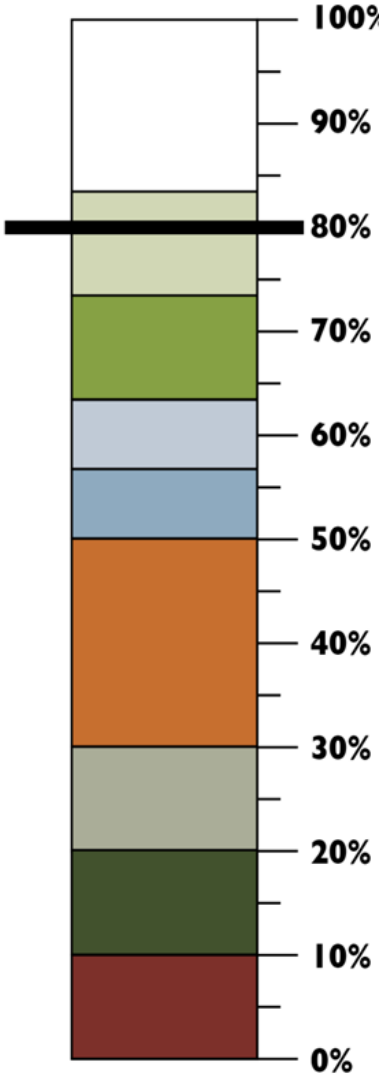
All range from zero to one;
higher values = greater empowerment

Five Domains of Empowerment (5DE)



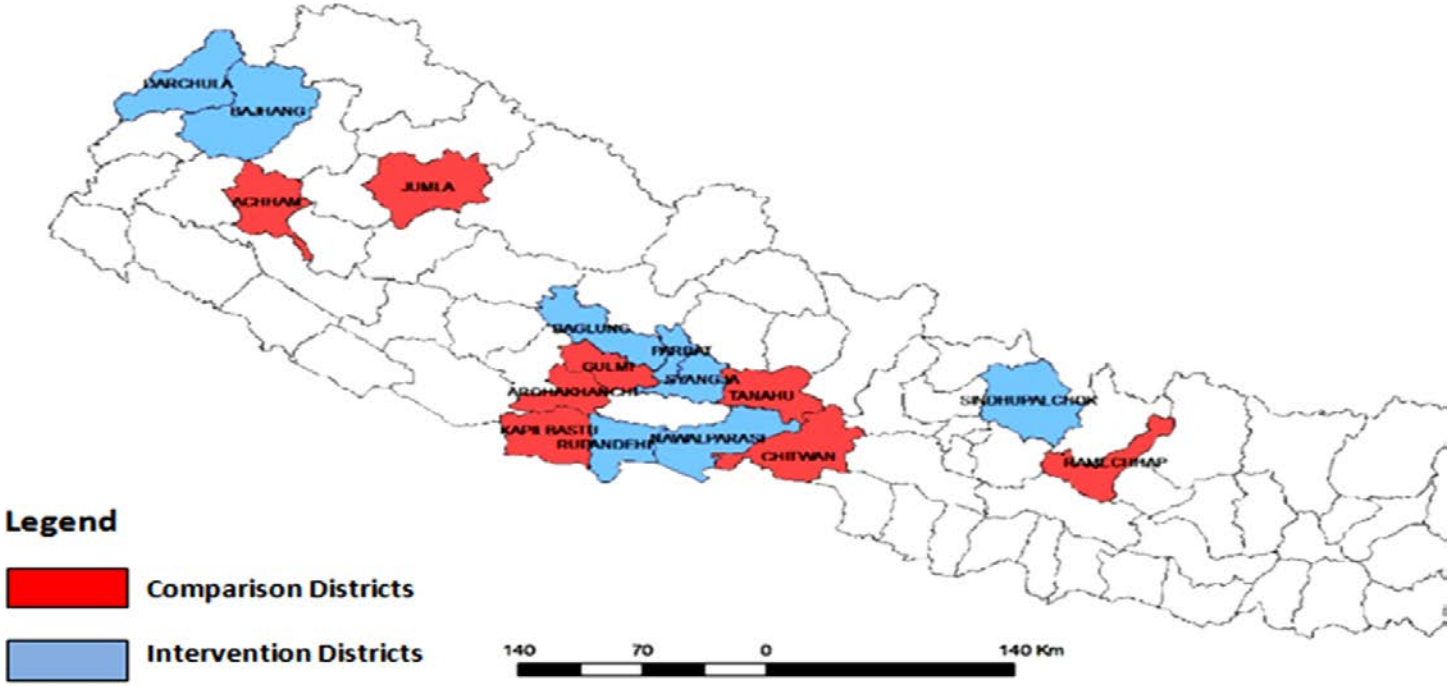
Who is empowered?

A woman who has achieved ‘adequacy’ in 80% or more of the weighted indicators is empowered



Data

- Baseline survey of an impact evaluation for *Suaahara*, a USAID funded multisectoral intervention, to address maternal and child undernutrition in Nepal
- Data collection: June 13- Oct 6, 2012 – New Era, IFPRI
- 4,080 households in 240 communities across 16 districts in 3 AEZs



Survey Questionnaires: Household Level

Women

- Child Health and Childcare
- **IYCF Practices**
- Household Food Security
- **Maternal Dietary Diversity**
- **Empowerment**
- Information Access
- Maternal Health
- IYCF Knowledge and Beliefs
- Water, Sanitation, and Hygiene
- **Anthropometry** and Hemoglobin
- Grandmother's Perspectives

Men

- Household Roster
- Household Economics
- Social Assistance
- **Agricultural Practices and Land Use**
- **Empowerment**
- House and WASH Observations

Key outcome variables

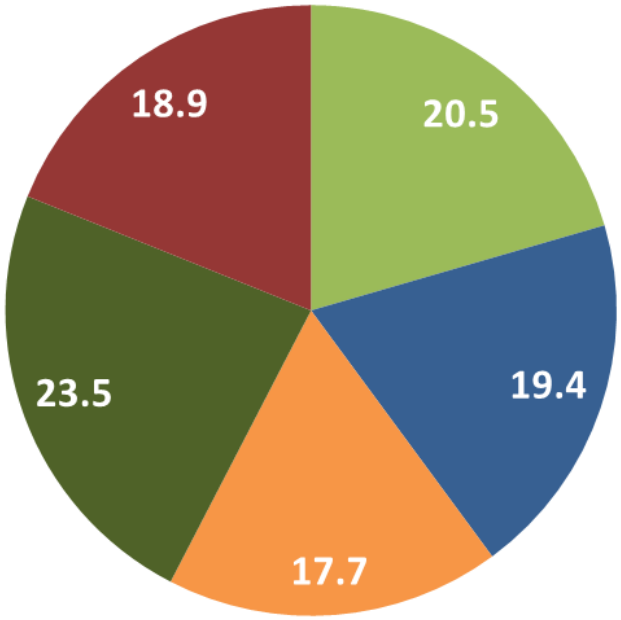
1. Child level
   - Child anthropometry (HAZ; WAZ; WHZ)
   - Child dietary diversity using WHO recommended 7 food groups
     - Starchy staples; Beans, lentils and nuts; dairy; eggs; and all flesh foods including meat, fish, and poultry ; vitamin A-rich fruits and vegetables; other fruits and vegetables
2. Maternal level
   - BMI (kg/m^2)
   - Dietary diversity using 9 food group indicator
     - Starchy staples; Beans, lentils and nuts; Dairy; Meat; Eggs; Fish;Green leafy vegetables; Vitamin A rich fruits & vegetables; Other fruits and vegetables

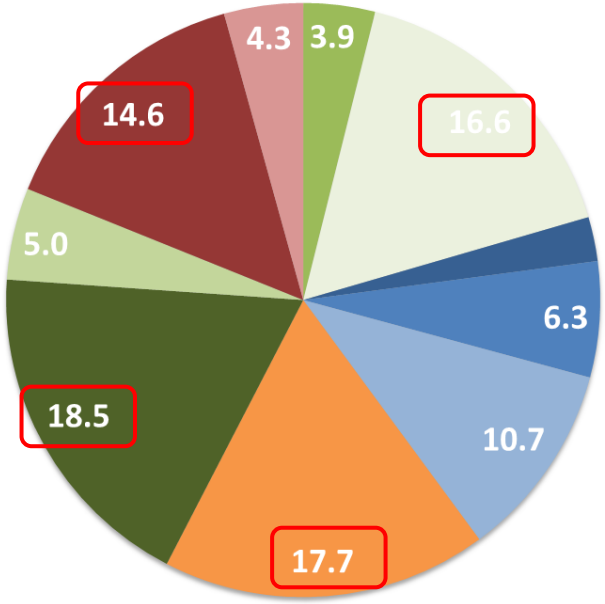
Key explanatory variables

1. Agriculture production diversity
   - A *9 group production diversity index* (PDI) analogous to the 9 food groups used for maternal dietary diversity
2. WEAI
   - Aggregate 5DE score
   - Decomposed indicators: **Group membership; Control over use of income ; Autonomy in production ; Workload** (indicators with largest contributions to women's disempowerment)
   - Gender parity gap (for households with both male and female respondents)
3. WEAI x PDI

WEAI Diagnostics

% Contribution of domains & indicators to women's disempowerment





Empowerment measures

Model #	Indicator	Definition
1	Aggregate empowerment	woman's 5DE score, the weighted average of achievements in the ten indicators
2	Autonomy in production	Relative Autonomy Index (RAI) score
3	Control over income	# ag and nonag activities in which she has input in income decisions or feels she can make decisions
4	Group membership	# of groups in which she is an active member
5	Workload	# hours worked in paid and unpaid activities
6	Gender parity gap	gap between 5DE scores of men and women; =0 if woman is empowered

Empirical specification

$$N = b_0 + b_1\, empowerment + b_2\, production\ diversity + b_3\,(empowerment \times production\ diversity) + \mathbf{b_4\, I} + \mathbf{b_5\, H} + v$$

N – nutrition outcomes; I – individual characteristics; H – household characteristics

- Controls:
  - *Child characteristics:* under 2 years old dummy, girl dummy, age (in months), age squared
  - *Mother characteristics:* age, age squared, height, years of schooling
  - *Household characteristics:* household size, dependency ratio, socio-economic status index, caste dummies, intervention group dummy, agro-ecological zone dummies
  - *Climate variables:* rainfall, temperature
- Estimation
  - OLS, interpreted as correlations, not causal
  - Estimated for different subsamples of households (sole male DM, both male & female DM, sole female absent male, sole female DM)

Key findings

	Production diversity	Women's empowerment	Interaction
Maternal DD	↑	↑ (empowerment score, group membership, control over income)	↓ (empowerment score, group membership)
Maternal BMI	↓ (female DM absent male)	↓ (workload)	↑ (workload, female DM absent male)
Child DD	↑ (except in HHs where male absent)	↓ (gender parity gap)	↑ (gender parity gap)
Child HAZ		↓ (gender parity gap) ↑ (control over income)	↑ (gender parity gap) ↓ (control over income)
Child WHZ	↑ (some models)		↑ (control over income)
Child WAZ	↑ (some models)		↑ (control over income)

Key findings

- Production diversity is positively associated with maternal and child dietary diversity, and children's WHZ, WAZ
- Domains of empowerment that are significant for mother and child nutrition may not always overlap
  - Group membership, control over income, reduced workload, and overall empowerment score are positively associated with better maternal nutrition
  - Control over income is associated with better HAZ, lower gender parity gap improves children's diets and HAZ
- Women's empowerment mitigates the negative effect of low production diversity on maternal and child dietary diversity and HAZ
  - Women's empowerment has greater potential to improve nutrition in households with less diverse production

To conclude…

- In this context, where only a negligible share of production is sold, agricultural interventions that promote diversification may improve nutrition outcomes
- Increasing production diversity, if increasing work intensity of women in labor-scarce households, may not improve maternal BMI
- Different aspects of empowerment matter for different nutrition objectives – policy response will be different
- Suggestive evidence that women's empowerment has a greater positive effect on child diets and HAZ in hhs with lower production diversity
  - In communities where diversification is limited by biophysical and agroecological characteristics, women's empowerment may be another venue for improving child diets and long-term nutritional status
  - Bundle women's empowerment interventions with agricultural interventions to increase nutrition impact

THANK YOU!